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What is claimed is:

1. A semiconductor device comprising:

an active layer configured to radiate light; and

a diffraction grating,

wherein said semiconductor device is configured to emit a light beam having a plurality of longitudinal modes within a predetermined spectral width of an oscillation wavelength spectrum of the semiconductor device.

2. The semiconductor device of Claim 1, further comprising:

a reflection coating positioned at a first end of said active layer and substantially perpendicular thereto; and

an antireflective coating positioned at a second end of said active layer opposing said first end and substantially perpendicular to said active layer,

wherein said reflection coating and said antireflective coating define a resonant cavity within said active region.

3. The semiconductor device of Claim 2, wherein a length of said resonant cavity is at least 800μm.

4. The semiconductor device of Claim 2, wherein a length of said resonant cavity is not greater than 3200μm.

5. The semiconductor device of Claim 1, wherein said diffraction grating is formed substantially along an entire length of said active layer.

6. The semiconductor device of Claim 5, wherein said diffraction grating comprises a plurality of grating elements having a constant pitch.

7. The semiconductor device of Claim 5, wherein said diffraction grating comprises a chirped grating having a plurality of grating elements having fluctuating pitches.

8. The semiconductor device of Claim 7, wherein said chirped grating is formed such that a fluctuation in the pitch of said plurality of grating elements is a random fluctuation.

9. The semiconductor device of Claim 7, wherein said chirped grating is formed such that a fluctuation in the pitch of said plurality of grating elements is a periodic fluctuation.

10. The semiconductor device of Claim 1, wherein said diffraction grating is a shortened diffraction grating formed along a portion of an entire length of said active layer.

11. The semiconductor device of Claim 10, wherein said diffraction grating

comprises a plurality of grating elements having a constant pitch.

12. The semiconductor device of Claim 10, wherein said diffraction grating comprises a chirped grating having a plurality of grating elements having fluctuating pitches.

13. The semiconductor device of Claim 12, wherein said chirped grating is formed such that a fluctuation in the pitch of said plurality of grating elements is a random fluctuation.

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14. The semiconductor device of Claim 12, wherein said chirped grating is formed such that a fluctuation in the pitch of said plurality of grating elements is a periodic fluctuation.

15. The semiconductor device of Claim 10, further comprising:

a reflection coating positioned at a first end of said active layer and substantially perpendicular thereto; and

an antireflective coating positioned at a second end of said active layer opposing said first end and substantially perpendicular to said active layer,

wherein said reflection coating and said antireflective coating define a resonant cavity within said active region.

16. The semiconductor device of Claim 15, wherein said shortened diffraction grating is positioned along a portion of the active layer in the vicinity of said antireflective coating.

17. The semiconductor device of Claim 16, wherein said antireflective coating has an ultra-low reflectivity of approximately 0.1% to 2%.

18. The semiconductor device of Claim 16, wherein said antireflective coating has an ultra-low reflectivity of approximately 0.1% or less.

19. The semiconductor device of Claim 16, wherein said reflection coating has a high reflectivity of at least 80%.

20. The semiconductor device of Claim 16, wherein said shortened diffraction grating has a relatively low reflectivity.

21. The semiconductor device of Claim 16, wherein said shortened diffraction grating has a coupling coefficient K*Lg of approximately .3 or less.

22. The semiconductor device of Claim 16, wherein said shortened diffraction grating has a coupling coefficient K*Lg of approximately .1 or less.

23. The semiconductor device of Claim 15, wherein said shortened diffraction

grating is positioned along a portion of the active layer in the vicinity of said reflection coating.

24. The semiconductor device of Claim 23, wherein said antireflective coating has a low reflectivity of approximately 1% to 5%.

25. The semiconductor device of Claim 23, wherein said reflection coating has an ultra-low reflectivity of approximately 0.1% to 2%.

26. The semiconductor device of Claim 23, wherein said reflection coating has an ultra-low reflectivity of approximately 0.1% or less.

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27. The semiconductor device of Claim 23, wherein said shortened diffraction grating has a relatively high reflectivity.

28. The semiconductor device of Claim 23, wherein said shortened diffraction grating has a coupling coefficient K*Lg of approximately 1 or more.

29. The semiconductor device of Claim 23, wherein said shortened diffraction grating has a coupling coefficient K*Lg of approximately 3 or more.

30. The semiconductor device of Claim 15, wherein said shortened diffraction grating comprises a first shortened diffraction grating positioned along a portion of the active layer in the vicinity of said antireflective coating, and a second shortened diffraction grating positioned along a portion of the active layer in the vicinity of said reflection coating.

31. The semiconductor device of Claim 30, wherein said antireflective coating and said reflection coating have an ultra-low reflectivity of approximately 0.1% to 2%.

32. The semiconductor device of Claim 30, wherein said antireflective coating and said reflection coating have an ultra-low reflectivity of approximately 0.1% or less.

33. The semiconductor device of Claim 30, wherein said first shortened diffraction grating comprises a first shortened diffraction grating which has a relatively low reflectivity and second shortened diffraction grating which has a relatively high reflectivity.

34. The semiconductor device of Claim 30, wherein said first shortened diffraction grating comprises a first shortened diffraction grating having a coupling coefficient K*Lg of approximately .3 or less.

35. The semiconductor device of Claim 30, wherein said first shortened diffraction grating comprises a first shortened diffraction grating having a coupling coefficient K*Lg of approximately 1 or more.

36. A method for providing light from a semiconductor laser device, comprising:

radiating light from an active layer of said semiconductor laser device;

providing a diffraction grating within said semiconductor laser device to select a portion of said radiated light to be emitted by said semiconductor laser device as an output light beam; and

selecting physical parameters of said semiconductor laser device such that said output light beam has an oscillation wavelength spectrum having a plurality of longitudinal modes located within a predetermined spectral width of the oscillation wavelength spectrum.

37. The method of Claim 36, wherein said step of selecting physical parameters comprises setting a length of a resonant cavity of said semiconductor laser device to provide a predetermined wavelength interval between said plurality of longitudinal modes.

38. The method of Claim 37, wherein said step of setting the length of a resonant cavity comprises setting the length such that the wavelength interval between said plurality of longitudinal modes is at least 0.1 nm.

39. The method of Claim 38, wherein said step of setting the length of a resonant cavity comprises setting the cavity length to no more than 3,200μm.

40. The method of Claim 37, wherein said step of setting the length of a resonant cavity comprises setting the length such that said plurality of longitudinal modes is likely to be provided within said predetermined spectral width of the oscillation wavelength spectrum.

41. The method of Claim 40, wherein said step of setting the length of a resonant cavity comprises setting the cavity length to at least 800μm.

42. The method of Claim 36, wherein said step of selecting physical parameters comprises setting a length of said diffraction grating to be shorter than a length of said active layer to thereby widen said predetermined spectral width of the oscillation wavelength spectrum.

43. The method of Claim 42, further comprising positioning said diffraction grating in the vicinity of an antireflective coating of the semiconductor laser device.

44. The method of Claim 43, further comprising setting a reflectivity of said antireflective coating to approximately 0.1% to 2%.

45. The method of Claim 43, further comprising setting a reflectivity of said antireflective coating to approximately 0.1% or less.

46. The method of Claim 43, further comprising setting a reflectivity of a reflection

coating opposed to said antireflective coating to at least 80%.

47. The method of Claim 43, further comprising setting a reflectivity of said diffraction grating to a relatively low level.

48. The method of Claim 43, further comprising setting a coupling coefficient K*Lg of approximately .3 or less.

49. The method of Claim 43, further comprising setting a coupling coefficient K*Lg of approximately .1 or less.

50. The method of Claim 42, further comprising positioning said diffraction grating in the vicinity of a reflection coating of the semiconductor laser device.

51. The method of Claim 50, further comprising setting a reflectivity of said reflection coating to approximately 0.1% to 2%.

52. The method of Claim 50, further comprising setting a reflectivity of said reflection coating to approximately 0.1% or less.

53. The method of Claim 50, further comprising setting a reflectivity of an antireflective coating opposed to said reflection coating to approximately 1% to 5%.

54. The method of Claim 50, further comprising setting a reflectivity of said diffraction grating to a relatively high level.

55. The method of Claim 50, further comprising setting a coupling coefficient K*Lg of approximately 1 or more.

56. The method of Claim 50, further comprising setting a coupling coefficient K*Lg of approximately 3 or more.

57. The method of Claim 42, further comprising positioning said diffraction grating as a first shortened diffraction grating in the vicinity of an irradiating film of the semiconductor laser device and positioning a second shortened diffraction grating in the vicinity of a reflection coating opposed to said antireflective coating.

58. The method of Claim 55, further comprising setting a reflectivity of said antireflective coating and said reflection coating to approximately 0.1% to 2%.

59. The method of Claim 55, further comprising setting a reflectivity of said antireflective coating and said reflection coating to approximately 0.1% or less.

60. The method of Claim 55, further comprising setting a reflectivity of said first and second diffraction gratings to a relatively low level and a relatively high level respectively.

61. The method of Claim 55, further comprising setting a coupling coefficient K*Lg

of said first and second diffraction gratings is approximately .3 or less, and approximately 1 or more respectively.

62. The method of Claim 36, wherein said step of selecting physical parameters comprises forming said diffraction grating as a chirped grating having a plurality of grating elements having fluctuating pitches to thereby widen said predetermined spectral width of the oscillation wavelength spectrum.

63. The method of Claim 62, wherein said step of forming said chirped grating comprises forming the chirped grating such that a fluctuation in the pitch of said plurality of grating elements is a random fluctuation.

64. The method of Claim 62, wherein said step of forming said chirped grating comprises forming the chirped grating such that a fluctuation in the pitch of said plurality of grating elements is a periodic fluctuation.

65. A semiconductor laser device comprising:

means for radiating light within said semiconductor laser device;

means for selecting a portion of said radiated light to be emitted by said semiconductor laser device as an output light beam; and

means for ensuring said output light beam has an oscillation wavelength spectrum having a plurality of longitudinal modes located within a predetermined spectral width of the oscillation wavelength spectrum.

66. The semiconductor laser device of Claim 65, wherein said means for ensuring comprises means for setting a wavelength interval between said plurality of longitudinal modes.

67. The semiconductor laser device of Claim 66, wherein said means for setting a wavelength interval comprises means for setting the wavelength interval to at least 0.1 nm.

68. The semiconductor laser device of Claim 65, wherein said means for ensuring comprises means for setting the predetermined spectral width of said oscillation wavelength spectrum.

69. The semiconductor laser device of Claim 68, wherein said means for setting the predetermined spectral width of said oscillation wavelength spectrum comprises means for setting the predetermined spectral width to no more than 3 nm.

70. A semiconductor laser module comprising:

a semiconductor laser device comprising:

an active layer configured to radiate light; and

a diffraction grating,

wherein said semiconductor device is configured to emit a light beam having a plurality of longitudinal modes within a predetermined spectral width of an oscillation wavelength spectrum of the semiconductor device.

71. The semiconductor laser module of claim 70, further comprising an internal isolator interposed between said semiconductor laser device and an optical fiber coupled to an output of said semiconductor laser module.

72. The semiconductor laser module of claim 71, further comprising a temperature control device configured to control a isolation characteristics of said internal isolator.

73. The semiconductor laser module of claim 70, further comprising a temperature control device configured to control an oscillation wavelength of said semiconductor laser device.

74. The semiconductor laser module of claim 73, wherein said temperature control device comprises a Peltier module.

75. The semiconductor laser module of claim 73, wherein said temperature control device comprises a thermister.

76. The semiconductor laser module of claim 70, further comprising a means for controlling an oscillation wavelength of said semiconductor laser device.

77. The semiconductor laser module of Claim 70, further comprising a polarization maintaining fiber, wherein an angle of the polarization axis of the polarization maintaining fiber against emitted light from the semiconductor laser device is approximately 45 degrees.

78. An optical fiber amplifier comprising:

a semiconductor laser device comprising:

an active layer configured to radiate light; and

a diffraction grating,

wherein said semiconductor device is configured to emit a light beam having a plurality of longitudinal modes within a predetermined spectral width of an oscillation wavelength spectrum of the semiconductor device.

79. A wavelength division multiplexing system comprising:

an optical fiber amplifier which includes a semiconductor laser device comprising:

an active layer configured to radiate light; and

a diffraction grating,

wherein said semiconductor device is configured to emit a light beam having a plurality of longitudinal modes within a predetermined spectral width of an oscillation wavelength spectrum of the semiconductor device.

80. A Raman amplifier comprising:

a semiconductor laser device comprising:

an active layer configured to radiate light; and

a diffraction grating,

wherein said semiconductor device is configured to emit a light beam having a plurality of longitudinal modes within a predetermined spectral width of an oscillation wavelength spectrum of the semiconductor device.

81. The Raman amplifier of Claim 80, wherein said semiconductor laser device is directly connected to a wavelength division multiplexing coupler 62 via a polarization maintaining fiber.

82. The Raman amplifier of Claim 81, wherein an angle of polarization axis of the polarization maintaining fiber against emitted light from said semiconductor laser device is approximately 45 degrees.